

S.E.A. STREETS

(Seattle Edge Alternatives)

**An Urban Creeks Legacy
Millennium Project**

SCOPE OF WORK

S.E.A. STREETS

(SEATTLE EDGE ALTERNATIVES - DEMONSTRATION DRAINAGE)

PROJECT SCOPE OF WORK

I. Project Objective(s)

The purpose of this project is to evaluate and construct an alternative means of providing control and water treatment for surface water run-off from non-arterial residential streets. The project will improve protection of creek ecosystems through stormwater management, sustainable neighborhoods, and community stewardship by demonstrating alternative street design options. The need to reduce stormwater runoff to our treatment plants and creeks forces us to evaluate how we design our streetscapes. Open ditch drainage systems in north Seattle provide a partnership opportunity between the City and homeowners to create a showcase for the region. This project will be constructed along a one block section in the Pipers Creek Watershed. The Block chosen for this project is the **11700 block of 2nd Avenue Northwest**.

The following project objectives will be met through the evaluation, design and development of a pilot project.

- decrease peak flow rates of surface runoff
- minimize impervious area (experiment with “pervious” surfaces)
- innovative street-edge treatment to allow ground water infiltration, if possible
- document effects of alternative design through research studies
- minimize maintenance requirements through proper design and resident stewardship
- provide complete street improvements including a sidewalk on at least one side, trees and landscaping, driveway adjustments, parking and street realignment as needed to create a traffic calming design
- change the existing paradigm that a curb/gutter/sidewalk system is necessary in residential areas
- increase urban “green cover.”

Background:

Currently, there are several residential areas in the City of Seattle that are not served by a curb/gutter/sidewalk system. The area north of 85th Street is the largest example of this situation. There is a strong desire by citizens to have sidewalks and other more formal street improvements on the streets that do not currently have them. Indeed most neighborhood plans include the desire for more of these improvements. This has been the focus of some study by Seattle Public Utilities and Seattle Transportation over the last 3-4 years. This project is part of the efforts by the City to develop new approaches to provide these amenities that neighborhoods want.

The surface drainage for this area occurs primarily through ditch/culvert and surface street runoff. Stormwater generally is directed to the underground storm drain system and ultimately discharged to surface receiving waters such as Lake Washington, Puget Sound or one of the creek systems. Whether served by curb/gutter/sidewalk or not, the adverse effects of stormwater runoff are numerous.

Land development in a drainage area or watershed involves replacing or modifying at least some of the natural surface cover with roads, roofs, driveways, and other impervious material. The effects of urbanization cause both water quality and quantity impacts to receiving waters. Pollutants such as oils, metals, pesticides/herbicides, and fecal coliform enter the receiving waters from the surrounding watershed. While the impacts on the receiving waters due to pollutants are of concern, by far the more serious impacts to urban receiving waters, such as streams, are water quantity related. Fast moving and high volume surface drainage reaches streams and creeks quickly and more often causing damage to the stream ecosystem.

Impervious surfaces greatly diminish the capacity of the soil to infiltrate water. This fact has serious implications to the creek ecosystem. When less water infiltrates the soil, the result can be lower groundwater levels and diminished or totally eliminated dry weather or base flows in creeks. In addition, the impervious surface causes not only a greater volume of runoff than natural conditions, but also causes an increase in the peak runoff rate. For example, the 2-year storm percentage increases fourfold- from 5 percent to 21 percent. The 10-year and 100-year percentages also increase, with the 10-year nearly tripling and the 100-year almost doubling. This indicates that land development impacts on runoff volume will be more acute for the smaller, more frequent storm events- a problem for channels and streams, which are sensitive to these storm events. Runoff rates also increase in response to urbanization; the 2-year, 10-year, and 100-year peak rates increase by factors of approximately 10, 5, and 3, respectively. The increase in peak flow rates and volumes in the rainy season, and the decrease in base flows in the summer season, threatens the integrity of the stream ecosystem.

While in-stream enhancement can address some aspects of degradation, the real effort needs to be directed to the upper watershed where most of the adverse processes originate. Projects designed to decrease runoff peak flows and volumes, and encourage increase soil infiltration, should be pursued. This is the main underlying goal of the S.E.A. Street Project.

I. Project Scope

Site Selection Process

The project location will be determined by a drive through of the watershed with members from the project team to identify potential blocks. There will then be a process to contact residents on the potential blocks to encourage them to find out more at an informational meeting and work on enrolling their neighbors in supporting the

improvements on their street. Interested blocks will petition SPU for this project. We will review the candidates and select a block for the project. The location will be selected using the following criteria:

Primary Criteria

- In the Pipers Creek Watershed
- A non-arterial residential street that is not a concrete street
- A through street, not a dead end or near a dead end
- A street that does not have existing curbs and sidewalks
- A street that has approx. 10 to 20 homes facing the road (probably will be a north/south street)
- Needs to have some direct connection to the creek basin (watershed)
- Not near critical slope areas
- Street does not have a steep grade
- Street does not have much cross slope
- No Metro Transit route on the street
- Properties are above street elevation
- Not directly served by existing storm drain system
- Alley access for properties a good idea

Selected Site: This project will be constructed on **2nd Avenue Northwest** between Northwest 117th Street and Northwest 120th Street. If problems are encountered on this block the alternate site will be on the 12500 block of Phinney Avenue North

Specific Design Elements:

Water:

No major participation anticipated at this time, possible relocation of hydrants if necessary. There is also a small potential for conflicts with the existing watermain depending on the size, location and depth of swale designs. If there are areas of conflict the swale design will most likely be modified, or watermain relocation will be evaluated.

Structures:

None anticipated.

Geotechnical Investigation (Materials Lab):

A soils investigation of the area will be performed to determine the opportunities for infiltration and how that could be accomplished. The drainage designers will meet with the Materials Laboratory staff to review and evaluate the soils conditions. Soils borings and percolation tests may be part of the investigation.

Roadway Design:

Provide design services for roadway, sidewalks, driveways and other features in order to meet design objectives listed below. Work with drainage designers, the landscape

architect and residents along the chosen street. There will also be an evaluation of pervious surfaces to be considered as part of the project. The pervious surfaces will not be used in the main travel portion of the roadway, but will be considered for up to 30-50% of the other pavement areas (driveways, parking etc).

Design objectives:

- Provide a sidewalk on at least one side of the block
- Accommodate drainage system needs
- Provide a street that reduces the speed and discourages through traffic
- Provide driveway and walkway adjustments to equal access that currently exists
- Provide on street parking that will address resident needs and project goals

Electrical/Signals/Lighting:

Relocation of utility poles is not anticipated, but will be determined if necessary by 60% design. Some evaluation and design of street lighting along the street will be necessary. This will be dependent on the existing lighting along the street, landscaping that is added, and desire by residents to have additional lighting.

Sewer/Drainage:

Drainage design is a key element to the project. This project will demonstrate new methods of collecting and conveying surface runoff from the street right of way while meeting the design objectives listed below. This will involve evaluation of options for providing above ground storage of peak flows. Infiltration of water through the soil will also be evaluated as a means to provide a more natural means to process and regulate rainwater.

Design Objectives:

- Reduce the overall runoff rate of surface drainage to the creek
- Evaluate and determine the options for soil infiltration of surface drainage
- Minimize pavement area where possible
- Study the effects of the alternative designs

A study of before and after flow volumes & rates for the block to evaluate the effectiveness of the improvements will be conducted. Two other areas will also be researched; community satisfaction and maintenance. Monitoring for appropriate parameters will be conducted during the pre-, during and post- construction phases. In this manner baseline conditions can be documented and the effects of the alternative design and can be ascertained. Because the system will not be functioning optimally until vegetation is established, site conditions may necessitate 3-5 years of monitoring before the system can be successfully evaluated. Monitoring tasks may be completed through the Center for Urban Water Resources, University of Washington, Seattle Public Utilities, or some other monitoring option. Funding for monitoring activities will be covered through monitoring funds identified as part of SPU's Stormwater Management Program. Residents living in and in the near vicinity of the pilot project will be surveyed to determine their concerns, opinions, and attitudes toward the project. As with the

stormwater monitoring, the resident satisfaction element will be conducted at pre-, during and post- construction. In this way, changing attitudes towards alternative street design can be documented. A detailed approach to gauge customer satisfaction has not yet been developed and it is uncertain whether this activity will be conducted in-house or by a consultant. The monitoring tasks that extend beyond the construction phase of the project will be performed by the Stormwater Management Program.

Landscape Improvements:

Provide landscape architecture design services in order to meet the design objectives listed below. Work with the property owners, the project team and other stakeholders will determine plantings that can be incorporated into the design. During the design process determine the most cost effective means to provide for plant establishment.

Design Objectives:

- Design improvements to retain existing trees and associated landscape treatments where possible
- Provide landscaping and street trees that balance property owners desires with project goals
- Provide native landscaping that works to improve the effectiveness of the drainage system where possible

Technical Resources:

Provide drafting services to produce a base map and to produce plans for review and contract documents. Produce final as built plans for the project.

Survey:

Perform a detailed survey of block in the Pipers Creek Watershed, including intersections at each end of block. Location and elevation of all driveways, walkways, utility castings, utility poles, drainage inverts for in and out flows, any trees in the right of way, locating the right of way. Provide cross sections at 25-foot intervals.

For all properties that have frontage on the 11700 block of 2nd Ave NW locate existing fences, trees, driveways, walkways, and other physical structures with 20 feet of the street right-of-way.

Provide survey during the construction phase as necessary to support the construction of the improvements.

Environmental:

An Environmental checklist will be prepared during the design process. Due to the location and type of work being performed no significant adverse impacts are anticipated.

A Determination of Non-significance is therefore anticipated and will very likely be prepared and filed following formal SEPA review by SPU.

Permits:

A street use permit will be secured prior to construction by the project manager. A grading permit will very likely be required for work on private property. Work for obtaining a permit will include pre-application consultation with DCLU. If a permit is need, then permit application preparation and submittal application, follow-up associated with DCLU's review, and construction oversight to ensure any provisions contained in the grading permit are implemented.

Community Relations:

There will be a variety of levels of Community Relations. Initially work will be with the Neighborhood Planning Office (NPO) and Neighborhood districts to select possible sites for the improvements. There will then be a process to contact residents on the potential blocks to encourage them to find out more at an informational meeting and work on enrolling their neighbors in supporting the improvements on their street. We will involve the property owners on the selected block during the design process using a variety of methods to address their desires for input. There will be 2 – 4 meetings during the design process

There will be a final open house presentation to the local community to update them on the project and the specifics of the design. Refer to the Communications plan attached for more detail.

Real Property Services:

Rights of entry and construction easements may be necessary, otherwise no services are expected at this time.

Specifications / Estimates:

Prepare the engineers estimate; prepare non-technical (boilerplate) specifications; provide review and assistance for technical specifications; prepare non-technical portion of addendum & provide review and assistance for technical portion; provide all necessary project support for advertising, bid opening, award, and filing of project.

Project Management:

SPU will provide all project-related information including scope, schedule and budget updates throughout the life of the project. The Project Manager will lead and participate in community interaction, coordination with the Seattle Design Commission and other agency coordination, as appropriate.

Construction Management:

SPU will provide all construction administration activities.

III. Special Issues:

This is a millennium project that is part of the Urban Creeks Legacy. There will be a lot of attention focused on it as a result. This project also is a demonstration project that will require new design elements not commonly used. This will necessitate a higher than normal design phase budget as more than one concept are evaluated for possible use.

IV. Assumptions

Schedule: The primary schedule goal at this point is to have a ground breaking ceremony possible for Earth Day 2000 (April 22, 2000)

V. Scope Checklist:

Project: S.E.A. STREETS (**Demonstration Drainage**) Project No. C399312

A.

Milestone:	Baseline Schedule:
Project Initiation:	June 1999
Start Design:	July 1999
Finish Design:	January 2000
Award Construction Contract:	April 2000
Start Construction:	May 2000
Finish Construction:	August 2000

B. Funding (CIP) PC 150,000 CO 550,000 Source DWF
Grants/loans: Ordinance

C. Estimate (if available) PC : Constr:

D. Design Review Contact Planned:

- Design Commission
- SEATRAN Review
- SPU/Utilities Review

E. Community Involvement: Previous No Planned? Yes X No
If yes, during: Scoping X Prel. Des. X Final Des. X Prior to Constr. X

F. Environmental Document
Anticipated: Chklst X Cat. Ex. DNS X EIS Grading Permit: No

G. Right-of-Way/Permits: None required
Needed: Permits X Easements R/W Ordinance

H. Department/Agency participation
• Department(s) SPU, SEATRAN, and ~~DCLU~~??

I. Staffing: SPU X Consultant: No Other: SEATRAN

J. Value Engineering: No Approx. date: NA

K. SPU responsibilities: Pre-construction

SPU Team Member	Group	Special Activity (if any)
John Arnesen	Project Management	Project Manager
Herman Wong	Sewer/Drainage	Lead Designer
Tracy Chollak	Sewer/Drainage	
Llew Hansen	Roadway Design	
Shane Dewald	SEATRAN Landscape	
Katherine Lynch	Environmental Services	SEPA/DNS
	Electrical	
	TR	
	Specs/Estimates	
	Water	
Trish McGuire	Public Information	
	Construction Mgmt.	

attachments: (check)

X Vicinity Map
 PC Schedule (Preliminary)
X Communications Management Plan
 Supporting Documentation

 CIP Form
 Estimating Forms

MANAGEMENT ACCEPTANCE AND COMMITMENT

Project: S.E.A. Streets (Demonstration Drainage)

The following signatures indicate acceptance of and commitment to the project specifications, schedule and budget as outlined in this proposal.

_____ Date _____
Project Manager, John Arnesen

_____ Date _____
SPU Client Lead, Bob Chandler

_____ Date _____
SPU Project Engineer, Herman Wong

_____ Date _____
Seattle Transportation, Roadway Design, Mike Johnson

_____ Date _____
Director of Project Management, Jon Shimada

_____ Date _____
Seattle Transportation Director, Darryl Grigsby

_____ Date _____
Director of Engineering Services, Tom Tanner